

REMARKS

The Office Action of June 19, 2006 has been carefully considered.

The previously noted allowability of claims 5-9, 11, 12, 14, 22 and 31 has been withdrawn. Claims 5, 8-12 and 15-20 are now rejected over prior art.

Objection has been raised to Fig. 1 as lacking descriptive legend or label. This objection was first raised in the Office Action dated May 17, 2005, and a new Fig. 1 was submitted with the Amendment filed on August 12, 2005. If there is still an objection to Fig. 1, it should be pointed out with specificity so it may be dealt with in a timely manner.

Objections have been raised to claims 24 and 25, and these claims have been amended in the manner proposed in the Office Action. In addition, claim 21 has been amended to indicate that each packet is switched for transmission to one of said at least one service collection units. Claim 32 has been canceled to avoid redundancy.

Claims 1-3, 14 and 30-32 have been amended under 35 USC 102(e) over Tiernan et al. It is alleged that Tiernan discloses collecting (via a PES packetizer), in at least one service collection unit (an encoder), services data in their original protocols from a plurality of different types of services data to be transmitted.

This rejection appears to have been based on a misconception as to how "services" are defined in accordance with the present invention. Those skilled in the art refer to three groups of services: packet-based services for data transmitted in packets, TDM-based services for voice, and cell-based services or ATM for transmitting information in cells. At present, each of these types of services requires

its own protocol and its own network, because there is no known method of mixing ATM with TDM and/or with packets for transmission together. Instead, if different services are to be transmitted together, one or both must be converted or transformed to a new protocol.

An excellent explanation of the different types of services and the difficulties in transmitting them in a single network can be found in paragraphs [0004] to [0010] of US 2002/0085565 to Ku et al, cited in the Office Action. Ku et al states that it would be useful to provide a network system that allows various formats to be transmitted with sharing of transmission media (but does not disclose Applicants' solution to the problem).

The claimed invention relates to a method which permits mixing of these different types of services, in their original protocols, without conversion or transformation for transmission together.

The Tiernan et al reference describes a method for universal messaging and multiplexing of video, audio and data streams, which are *all Internet packet-based services* (and thus a single service). Tiernan et al is directed to transmission of MPEG video and audio in different forms over packet-based networks. The method is based on a universal message structure that is compatible with the Packetized Elementary Streams (PES) packet structure (col. 3, lines 28-33), and provides for the adoption of the principles of protocol layering (col. 4, lines 44-48). As stated in col. 5, lines 56-58, the invention of Tiernan et al relates to a packet-based communication system. Elementary streams and control information input into an encoder are converted to PES output streams. Thus, the output stream is not in the same protocol as the input stream, but has been converted to a PES

packet-based service (col. 5, line 62-col. 6, line 4). There is no teaching, suggestion or possibility in Tiernan et al of *combining TDM or ATM services with these packet-based services*. Thus, this is not a method for multi-service multiplexing, as in the present invention.

The claimed invention, to the contrary, relates to a method for multiple services transmission and receipt over an optical network. The method includes a number of novel steps, including collecting, in at least one service collection unit, services data in their original protocols from *a plurality of different types of services* to be transmitted. Thus, according to the invention, packet-based data services, TDM-based voice services, and cell-based ATM services can all be processed **in their original protocols** into novel "packets," which can be converted into optical signals on an optical fiber for transmission into a metro network. Upon receipt in an aggregator module, the services data from a plurality of such "packets" are sorted according to service type for forwarding, each over its own network, depending on the type of service.

Tiernan et al does not provide for collecting services data in their original protocols from a plurality of different types of services to be transmitted. Accordingly, independent claim 1, and dependent claims 2-3, 14 and 30-32 are deemed to be allowable over Tiernan et al.

Further, with regard to claims 14, 30 and 31, Tiernan et al does not switch services data of a single type of service to an aggregation sub-module, or sort the services data according to service type, as all the services data in his system are of a single type of service.

Withdrawal of this rejection is requested.

Claims 21, 23 and 24 have been rejected under 35 USC 103(a) over Tiernan et al in view of Jasen et al. In

particular, it is alleged that Tiernan et al discloses receiving aggregated services data, each services data in its own protocol and at its own bit rate, sorting the services data, processing the services data in their original protocols into packets, and switching each packet to an optical fiber for transmission.

As discussed above, Tiernan et al does NOT receive data of different services in their own protocols or process the data **in their original protocols** into packets. Rather, Tiernan et al receives packets and/or converts received data into PES packets.

It is further stated that Jasen et al discloses adding a connection identification tag to each packet.

Jasen et al discloses a method and system for prioritizing network services in order to improve Quality of Service. One of the methods suggested is tagging packets with QoS information. Applicants do not, however, claim adding a tag, *per se*, but only in connection with the novel method of claim 1. Furthermore, Jasen et al do not disclose or suggest processing different data services in their original protocols into packets. Thus, claim 21 is deemed to be allowable over Tiernan in view of Jasen. Claims 23 and 24 depend from, and add additional limitations to, claim 21, so are also deemed allowable.

Withdrawal of this rejection is requested.

Claims 22, 25, 27 and 29 have been rejected under 35 USC 103(a) over Tiernan et al in view of Jasen et al and further in view of Ku et al. It is alleged that Ku et al discloses encapsulating tagged packets into PoS frames.

The combination of Tiernan and Jasen has been discussed above, and Applicants rely on that discussion. Ku et al discloses a technique for time division multiplex forwarding

of data streams in packets, which handles both *streams of data* and *discrete data packets*. This reference, too, refers to only one type of services data, namely packet-based services, which are switched (not transmitted) via a switch, operating as a store-and-forward device, the packets being mapped onto discrete time slots. In this way, large packets can be broken into smaller sizes for transmittal. Ku et al does not teach or suggest combining data services of different types for transmittal together, as taught by the invention.

Ku et al proposes a way to use a single switch for TDM-like and data-based services by separating them from one another and decreasing delays for the TDM-like service by cutting these packets in pieces. There is no service multiplexing, but different methods of operation.

The claimed invention involves multiplexing services for TDM-like and data-based services and/or cell-type ATM services, while keeping them in their native protocols. The solution proposed by Ku et al involves switching, not transmission, and does not include multiplexing the services. Furthermore, Ku et al also refers to only one type of services data, namely packet-based services, which are switched (not transmitted) via a switch, operating as a store-and-forward device, the packets being mapped onto discrete time slots. Ku et al uses a TDM-like approach to transmit streaming services in the proper order and synchronously, unlike transmission as data-based services, which have a burst character.

In other words, Ku et al uses different steps and methods to deal with TDM and Packet-based services. When a TDM-like streaming service is coming, it is cut into small pieces to give those pieces the shortest time to go through the switch. This is done because long streaming services can be delayed in the switch, and information properties can be lost. Actually,

TDM services are separated by Ku et al from data-based services. In this regard, Ku et al solved the problem of passing both types of services through one type of switch.

Thus, as can be seen in claims 1-4 of Ku et al, and paragraph [0137], Ku et al treats packets as whole units, while streaming services are cut into smaller portions or packets and forwarded through the switch with a higher priority indicator than the packets. In this way, large packets of TDM or streaming services can be broken into smaller sizes for switching.

In the claimed invention, on the other hand, ALL services are dealt with equally, combined into a single stream, in their original protocols. They are capable of passing through a network without losing data. This process is multiplexing, not switching, as is the Ku et al process.

Withdrawal of this rejection is requested.

Claims 5, 8, 12 and 15-19 have been rejected under 35 USC 103(a) over Tiernan et al in view of Ku et al. It is alleged that Tiernan et al fails to disclose segmenting an incoming bit stream of services data, while Ku et al does disclose segmenting such a bit stream, pointing to the use of label switching (e.g., MPLS protocol). As with regard to claim 1, Tiernan et al is a packet-based system only, and cannot collect or process services data from different services, as understood by one skilled in the art, together in their original protocols. The use of MPLS (multi-protocol label switching) is not the same as segmenting an incoming bit stream of services data, but is only adding a label as a tag to existing packets. Ku et al takes large packets and makes them into smaller packets with higher priority, to prevent backup of other packets in the switch.

The Office Action notes that paragraph [0060] of Ku et al

provides motivation for one of ordinary skill "to allow disparate network equipment the ability to communicate via a shared network resource." While there may be motivation to do so, neither Tiernan et al nor Ku et al discloses or suggests the method steps of the invention which enable one to do so.

Thus, the combination of Tiernan et al and Ku et al does not disclose or suggest the invention, and withdrawal of this rejection is requested.

Claim 9 has been rejected under 35 USC 103(a) over Tiernan et al and Ku et al, in further view of Martin. It is alleged that Martin discloses scrambling before encapsulation. Martin does not however cure the defects of Tiernan et al and Ku et al as discussed above, and withdrawal of this rejection is requested.

Claims 10 and 20 have been rejected under 35 USC 103(a) over Tiernan et al and Ku et al, further in view of Farhan. It is alleged that Farhan discloses WDM multiplexing. Farhan, however, describes and claims a cable television system, and does not cure the defects of Tiernan et al and Ku et al as discussed above. Withdrawal of this rejection is requested.

Claim 11 has been rejected under 35 USC 103(a) over Tiernan et al and Ku et al, further in view of Chesler et al. It is alleged that Chesler et al discloses variable-length segments. Chesler et al relates, however, to a dispersion equalization technique for correcting dispersion-induced signal degradation within optical fibers. L1 and L2, referred to in the Office Action, are *variable length segments of an optical fiber*. There is no relevance whatever to the claimed subject matter, segmenting a bit stream into variable length segments.

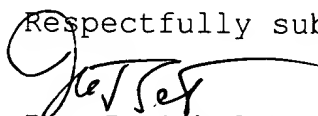
Withdrawal of this rejection is requested.

Claim 1 remains provisionally rejected on grounds of

obviousness type double patenting over claim 1 of co-pending application 09/753513. When allowable subject matter is identified in this application, a decision will be made as to the filing of a terminal disclaimer.

In view of the foregoing amendments and remarks, Applicants submit that the present application is now in condition for allowance. An early allowance of the application with amended claims is earnestly solicited.

Respectfully submitted,



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